Tri-Party Agreement

Focus Sheet

Protecting the Columbia River from Hanford Chromium

U.S. Department of Energy • U.S. Environmental Protection Agency • Washington State Department of Ecology

A proposed plan is being issued that recommends use of a new technology to cleanup a recently characterized chromium-contaminated groundwater plume at the Hanford Site. This new technology, called In Situ Redox Manipulation, is described in the *Proposed Plan for an Amendment of the Interim Remedial Action at the 100-HR-3 Operable Unit* (DOE/RL-99-04). The plume is small with high chromium concentrations and is ideal for this new technology. The process involves creating a permeable treatment barrier that catches toxic chromium (hexavalent) and converts it to a less toxic chromium (trivalent) and precipitates it out of the groundwater. This process will provide protection to the aquatic organisms in the river, protect human health, and provide information that will lead to a final remedy. The new technology will be used for this specific plume only and will not alter or affect the pump and treat operation specified in the record of decision that is currently addressing other chromium plumes in the 100-D and 100-H Reactor Areas.

The Washington State Department of Ecology, the lead regulatory agency, in concurrence with the U.S. Department of Energy and U.S. Environmental Protection Agency (Tri-Party Agencies) are proposing this amendment to the selected alternative specified in the1996 Record of Decision for the 100-HR-3 Operable Unit. The Tri-Party Agencies encourage public comment on this important cleanup decision.

REQUEST FOR PUBLIC COMMENT

Public comments on the Proposed Plan for an Amendment of the Interim Remedial Action at the 100-HR-3 Operable Unit (DOE/RL-99-04) will be accepted from July 23 to August 23, 1999.

To request copies of the document, or to submit comments, either written or electronically, please contact:

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Or call Hanford Cleanup Toll-free, 1-800-321-2008

Background

The 100-HR-3 Operable Unit is located in the north-central part of the Hanford Site along the Columbia River. It includes groundwater underlying the 100-D/DR and 100-H Reactor Areas, and the area between the sites (see map). While the reactors were in operation, reactor cooling water contaminated with sodium dichromate was discharged to the soil and contaminated the groundwater. Groundwater contaminated with chromium, as a result of the sodium dichromate, is present beneath the reactor areas and is flowing to the Columbia River. The groundwater enters the river through upwelling in the river bottom and seeps along the shoreline. The chromium found in the groundwater dissolves very easily in water, moves freely in the groundwater, and is toxic to aquatic organisms. Concentrations

of chromium in groundwater at the proposed In Situ Redox Manipulation site exceed the Washington State Ambient Water Quality Standard of 11 micrograms/liter (11 parts/billion).

The selected remedial action for the 100-HR-3 Operable Unit interim remedial action record of decision issued in April 1996, was installation of a groundwater pump and treat system. The system was installed and began operation in 1997, and as of May 1999, 60 kilograms (132 lbs.) of chromium has been removed from nearly 550,000,000 liters (145,299,000 gallons) of groundwater.

In 1997, a treatability test was implemented at the recently characterized chromium plume to evaluate the feasibility of deploying the new technology at this site, due to the high concentrations of chromium that were detected. Based on positive results from this study, the proposed alternative described in the proposed plan is full deployment of In Situ Redox Manipulation, since the groundwater associated with this recently characterized chromium plume is not within the current pump and treat capture area.

Interim Remedial Action Goals

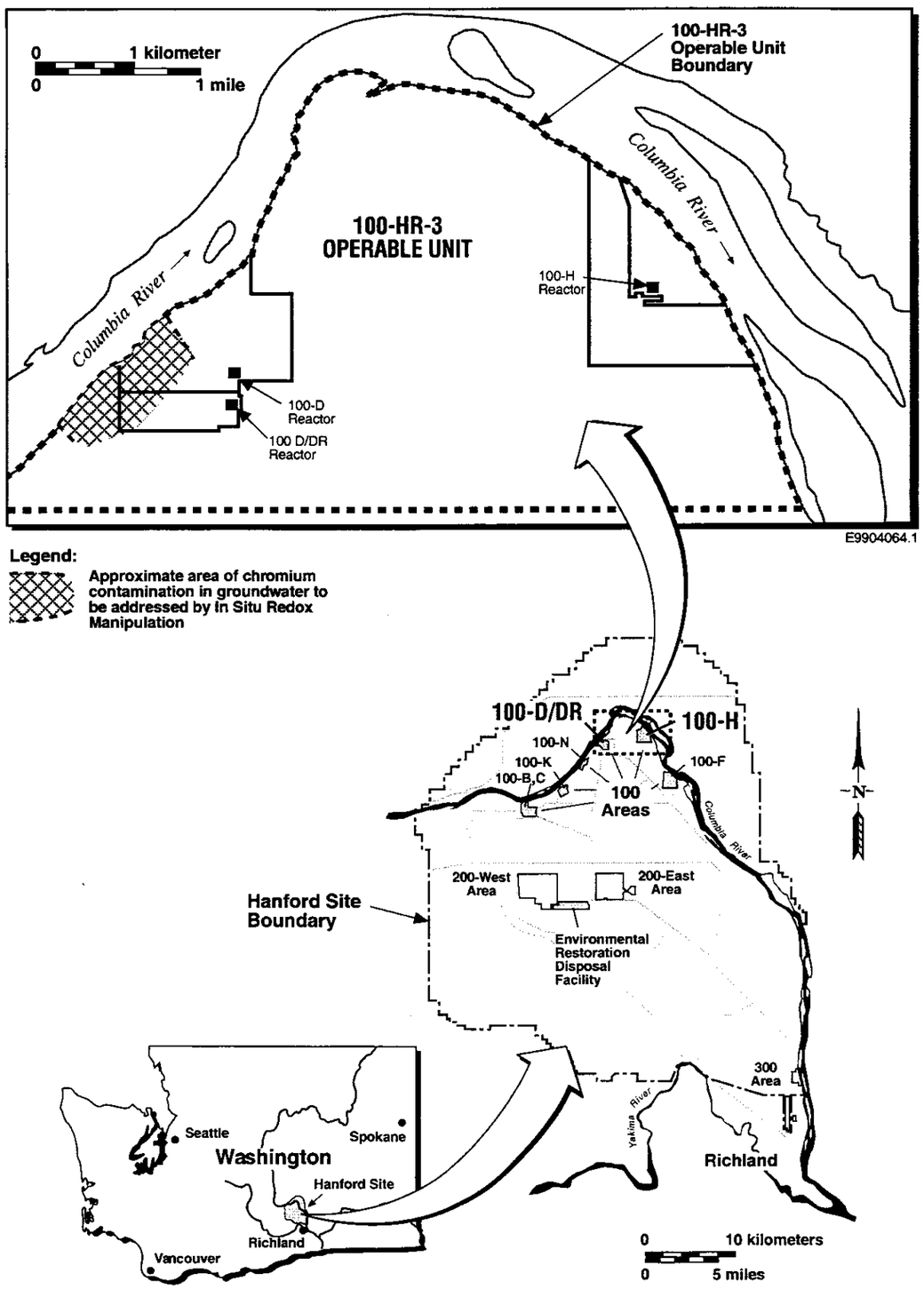
As described in the 1996 Record of Decision, the remedial action objective is to protect human health and the environment. This includes the following three components:

- Protection of aquatic organisms in the river substrate from contamination in groundwater entering the Columbia River.
- Protection of human health by preventing exposure to contaminants in the groundwater.
- Provide information that will lead to the final remedy.

The goal of the interim remedial action is to prevent discharge of chromium at levels exceeding concentrations that are considered protective of aquatic life in the Columbia River and riverbed sediments. The remedial action objectives will remain the same for the amendment to the record of decision.

Summary of Alternatives

The proposed plan provides a comparison between In Situ Redox Manipulation and installation of a pump and treat system as the alternatives considered. The "no action" alternative was not considered, since the 1996 Record of Decision rejected the "no action" alternative as not meeting the threshold criteria for protection of the environment.



The Tri-Party Agencies completed studies on the new technology that show excellent results for long-term remediation of chromium contamination in the groundwater. The In Situ Redox Manipulation process involves injecting chemicals into the aquifer through a series of wells parallel to the Columbia River shoreline to create a permeable barrier that the contaminated groundwater can flow through. The chemical reacts fairly rapidly with the naturally occurring iron in the soil creating a treatment zone. The chemical is then pumped out of the treated portion of the aquifer and disposed. Installation of the permeable treatment zone would take approximately 18 months at a cost of $4,524,000 over a 20-year period.

Since the newly characterized chromium plume is not within the current pump and treat capture areas, it has been determined that a new pump and treat system would be required to remediate this chromium plume. The treatment system could be constructed and operational in approximately 15 months at a cost of $11,237,000 over a 20-year period.

Summary of Preferred Alternative

Based on the nine criteria EPA uses to evaluate alternatives, the preferred alternative for remediation of the recently characterized chromium plume is to implement In Situ Redox Manipulation. The chromium plume has a higher concentration of chromium than other plumes being treated by pump and treat systems within the 100-HR-3 Operable Unit. Because this plume will require long-term treatment, it has been determined that In Situ Redox Manipulation is more cost effective with minimal risk to human health and the environment.

This recommended amendment to the 1996 Record of Decision will be finalized only after all public comments have been considered. The Tri-Party Agencies encourage the public to provide comments on this plan and examine all relevant materials associated with making this amendment. Public meetings are not currently scheduled, however, should substantial public interest indicate a need for such meetings, the Tri-Party Agencies will respond accordingly.

Hanford Public Information Repository Locations:

PORTLAND
Portland State University
Branford Price Millar Library
Science and Engineering Floor
Tri-Party Information Repository
934 SW Harrison and Park
(503) 725-3690
Attn: Michael Bowman

SEATTLE
University of Washington
Suzzallo Library
Government Publications Room
(206) 543-4664
Attn: Eleanor Chase

RICHLAND
U.S. Department of Energy
Public Reading Room
Washington State University, Tri-Cities
Consolidated Information
Center, Room 101L
2770 University Drive
(509) 372-7443
Attn: Terri Traub

SPOKANE
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(509) 323-3839
Attn: Connie Scarpelli

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